

STUDIES ON THE GENUS *BIDENS* L. (COMPOSITAE) FROM THE EASTERN HEMISPHERE. 4. A NEW SPECIES FROM ETHIOPIA

T.G.J. Rayner

Department of Botany, Plant Science Laboratories, University of Reading, Whiteknights, P.O. Box 221, Reading, RG6 2AS, U.K.

ABSTRACT

A new species, *Bidens kefensis* T.G.J. Rayner, is described from the Kefa administrative region of Ethiopia. It is shown to be a very distinctive taxon, perhaps most closely related to *B. ugandensis* (S. Moore) Sherff from which it is primarily distinguished by its fewer ray florets, annular thickening at the base of the limb of the disc floret corollas, and dorsally produced cartilaginous corona of the cypselas.

KEY WORDS: *Bidens*, Compositae, taxonomy, Ethiopia

During continuing revisional studies of Eastern hemisphere *Bidens*, a collection from Ethiopia with distinctive capitular characters was discovered among specimens housed at MO and WAG. An examination of the revision of *Bidens* in northeastern tropical Africa by Mesfin (1984) has failed to reveal any species possessing the same characters. Thus it is here described as a new species.

Bidens kefensis T.G.J. Rayner, *sp. nov.* TYPE: ETHIOPIA. Kefa administrative region, about 10 km SW of Jima, 18 Dec. 1965, *W.J.J.O. de Wilde, cum suis*, 9266 (HOLOTYPE: WAG; Isotypes: MO, WAG).

Species nova haec similis *Bidenti ugandensi* (S. Moore) Sherff sed ab ea differt plantis tantum usque ad centum viginti centimetra altis, caulibus simplicibus aut ad basem ramosis, foliis omnibus oppositis, laminis foliorum indivisis aut lobatis non pinnatisectis, involucris glabris aut ad basem sparsim hispidis-pubentibus, phyllariis exterioribus uniseriatis linearibus supra parum dilatatis aut linearibus-oblancoelatis, flosculis radii sex aut septem, corollis flosculorum disci ad basem limbi annulare parum incrassatis,

filis staminum tantum 0.7-1.4 millimetris longis, ramis stigmatum solummodo 1.0-1.2 millimetris longis, cypselis tantum 3.5-4.4 millimetris longis, apice glabris et corona straminea cartilaginea dorsaliter producta usque ad 0.35 millimetri longa 0.7 millimetri lata instructis, aristis cypselarum (ubi adsunt) nudis tantum usque ad 0.4 millimetri longis, carpodio cartilagineo parum dorsaliter producto usque ad 0.2 millimetri longo basi instructis.

Perennial herbs, to 0.8-1.2 m tall; stems arising from a woody rootstock, sometimes prostrate below, erect above, simple or branched at base; stems and branches more or less terete or subtetragonal above, 1.6-2.4 mm diam. near base, to 0.6-1.3 mm diam. beneath peduncles, striate-sulcate above, somewhat irregularly sulcate below, dark brown toward base, becoming pale green or pale green-yellow above, woody from base up to ca. 1/3 of length of stem, glabrous or, especially above, with isolated, minute (ca. 0.1-0.2 mm long), erect, uniseriate, few-cellular hairs. Leaves decussate, sessile, 0.4-7.4 cm long \times 0.8-6.8 mm wide, the largest generally toward the middle, more or less gradually reduced above and below, linear or narrowly ovate linear to narrowly elliptic in outline; apex acute to subacute, callose indurated; bases narrowly cuneate from about middle of lamina or below, connate; margin entire or serrate to serrate incised or more rarely deeply linear lobed, sometimes slightly revolute or involute and callose indurated; teeth or lobes 1-3 on each side, 0.8-6.2 mm long, acute, callose indurated and slightly mucronate; lamina somewhat coriaceous, pale olive-green, faces glabrous or sparsely hispidulous, margin with more or less 2 rows of antrorse, hispidulous hairs especially in the upper half of the leaf. Capitula radiate, heterogamous, erect, 2.7-3.8 cm diam. \times 6-7 mm high at anthesis, to 9 mm high in fruit, solitary or 2-3 in lax cymes at apices of stems and branches; receptacles flat or slightly convex; peduncles to 2.6-9.8 cm long, very slender, 0.3-0.6 mm diam. at anthesis, to 0.9 mm diam. in fruit, tetragonal to more or less terete, striate-sulcate, glabrous or sparsely pubescent, sometimes somewhat densely pubescent in upper part; ebracteate or with 1-3 alternate bracts resembling the outer phyllaries. Involucre depressed hemispheric, glabrous or sparsely hispid-pubescent at base; outer phyllaries uniseriate, 7-9, linear and slightly dilated above to narrowly obovate linear, with a subacute to obtuse, callose indurated and mucronulate apex, entire at margin, 3.2-3.7 mm long \times 0.7-0.8 mm wide at anthesis, to 4.3 mm long in fruit, erect, green, sometimes darkened at apex, with 1-3 red nerves, glabrous; inner phyllaries uniseriate, 6-7, ovate to ovate elliptic and often attenuate from about middle, subabruptly narrowed near the more or less acute to subobtuse apex, 4.1-5.0 mm long \times 1.6-1.9 mm wide at anthesis, to 6.1 mm long \times to 2.3 mm wide in fruit, erect, membranous, dark brown to stramineous or yellow, darkest toward base and at apex, with 10-15 red-brown nerves, glabrous or dorsal surface sparsely pubescent chiefly along the median

nerve or somewhat densely so especially toward the puberulous apex. Ray florets 6-7, neuter; ovary more or less oblong, 1.0-1.3 mm long \times 0.7-0.8 mm wide, glabrous, exaristate, style absent; corolla tube 1.4-1.8 mm long, glabrous or more or less pubescent; ray yellow or yellow orange, oblong to elliptic or ovate oblong, 1.4-1.5 cm long \times 5.3-5.8 mm wide, with 8-13 red-brown nerves, glabrous; apex rounded or subobtusate, entire or subentire to slightly cuspidate or emarginate, sinus to 0.3 mm deep. Paleae narrowly oblong or narrowly elliptic-oblong, gradually attenuate above to the subacute to obtuse or somewhat rounded and often slightly mucronate apex, entire at margin, 4.5-6.0 mm long \times 0.8-0.9 mm wide at anthesis, to 6.6 mm long in fruit, membranous, glabrous, pale yellow, slightly darkened toward apex, with 1-3 pairs of red or orange brown nerves, especially the central pair darker above, the lateral pairs sometimes coloured only toward middle. Disc florets 22-31; corolla yellow or orange yellow, glabrous or lobes dorsally sparsely pubescent; limb campanulate, 2.4-2.6 mm long \times 1.0-1.4 mm wide, slightly annularly thickened at base, apex (4-)5 lobed; lobes triangular, acute at apex, 0.5-0.6 mm long \times 0.5-0.6 mm wide at base, papillate on margin; limb gradually or subabruptly attenuate below into a narrow, 1.1-1.2 mm long \times 0.4-0.5 mm wide, terete tube; anthers 1.8-2.0 mm long \times 0.5-0.8 mm wide, brown; endothelial tissue with polarized thickening; apical appendages narrowly ovate-triangular, obtuse at apex, 0.4-0.5 mm long \times 0.25-0.30 mm wide, often with a dark brown longitudinal median nerve, margins recurved; basal appendages sagittate, not or just reaching base of the filament collar; collar 0.5-0.6 mm long \times 0.15-0.20 mm wide; filament 0.7-1.4 mm long, involute; style 3.7-5.5 mm long, bulbous or at least slightly dilated at base, with caudate, 1.0-1.2 mm long branches; stylopodium cylindrical. Cypselas unwinged but margin usually with a narrow (to 0.05 mm wide) and often interrupted, light brown, cartilaginous extension; body oblong or oblong elliptic, 3.5-4.4 mm long \times 1.3-1.7 mm wide, grey-black, strongly compressed, dorsal face convex or somewhat carinate, ventral face concave with a raised median rib, both faces 4 to 10 striate-sulcate and glabrous or subsparingly erect setose chiefly above, the setae often arising from light brown tubercles, margins more or less densely erect setose, the setae generally becoming slightly longer toward the apex; apex surmounted by a corona, glabrous; corona stramineous, cartilaginous, dorsally produced, slightly flattened, laterally biaristate or rarely exaristate, to 0.10-0.35 mm tall \times 0.5-0.7 mm wide; aristae erect or slightly divergent, rounded-triangular at base, subulate above, pale yellow, to 0.15-0.40 mm long \times ca. 0.06 mm wide at base, nude; base of cypselas with a short (to 0.1-0.2 mm long), slightly dorsally produced, cartilaginous flaplike carpodium.

Bidens kefensis is apparently endemic to the highlands of southwestern Ethiopia, being known at present only from the type locality near Jima. It was described by de Wilde as growing in a marshy place at an altitude of ca. 1800 m.

It is a distinctive species with no known near relatives in Ethiopia, and is perhaps most closely related to *Bidens ugandensis* (S. Moore) Sherff from western central Africa. *Bidens kefensis*, however, differs from this species in the following ways: stems only to 1.2 m tall (to 2.3 m tall in *B. ugandensis*), simple or branched at base (not sometimes branched above); leaves all opposite (not uppermost sometimes alternate), with lamina undivided or lobed (not often pinnatisect); involucre glabrous or sparsely hispid pubescent at base (not densely hispid at base); outer phyllaries 1 seriate (not 1 to 2 seriate), linear and slightly dilated above or linear-oblongate (not linear to narrowly ovate or narrowly elliptic); ray florets 6-7 (not 8-16); corolla of disc florets slightly annularly thickened at base of limb (not unthickened); filaments of the stamens 0.7-1.4 mm long (not 3.6-4.4 mm long); stylar branches 1.0-1.2 mm long (not 1.4-2.2 mm long); cypselas 3.5-4.4 mm long (not 4.3-14.1 mm long), apex glabrous, with a stramineous, cartilaginous, dorsally produced, to 0.35 mm long \times to 0.7 mm wide corona (not subsparingly to somewhat densely erect setose); aristae to 0.4 mm long, nude (not to 3.1 mm long and often barbed); base of cypselas with a cartilaginous, slightly dorsally produced, to 0.2 mm long carpodium (not hollow and encircled by a cartilaginous, to 0.4 mm long carpodium).

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